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ATTACHMENT BRACKET FOR SHELF SUPPORT SYSTEM

FIELD OF THE INVENTION

5 The present invention relates to shelving systems and, more particularly to an improved attachment bracket adapted to be mounted with a particular type of existing shelving systems.

10 BACKGROUND OF THE INVENTION

 Various types of shelving systems have been provided with post support brackets, whereby they combine ease of installation and variable height positioning. Furthermore, some shelving systems using brackets have been
15 disclosed wherein no fastening means nor tools outside of a hammer are needed for the assembly.

 U.S. Patent No. 4,079,678, issued on March 21, 1978 to Champagne, discloses such a bracket to be used with wire shelves and will be described with more detail
20 hereinafter. U.S. Patent No. 4,592,286, issued to Trubiano on June 3, 1986, uses the aforementioned bracket with flat surface shelves. Patent No. 4,592,286 further discloses means for supporting adjacent shelving in planar alignment to a shelf supported between four posts provided with such
25 support brackets.

 Although the above mentioned brackets provide simplicity of installation and variable height positioning, as well as solid connection means to strengthen shelving systems against jarring, the previously disclosed brackets
30 only oppose gravity against upward vertical motion, for instance when a shelf is struck from below, it can pop out of its connecting bracket. Furthermore, the bracket forms a collar with a portion of the shelving, whereby the collar ensures the releasable securing to the corner post.
35 However, the assembly of the collar is troublesome if it is to be achieved by a sole individual as the bracket and the shelf must be held while assembling one to another.

Furthermore, the prior art bracket of U.S. Patent No. 4,079,678 is sometimes difficult to assemble due to the right angle configuration of its connecting slot.

5 SUMMARY OF THE INVENTION

 It is a feature of the present invention to provide a bracket adapted for supporting shelves between square cross-section support posts and which substantially overcomes the above mentioned disadvantages of the prior art.

 According to the above feature of the present invention, from a broad aspect, the present invention provides an attachment bracket for a shelf support system, adapted for being mounted to a post of square cross-section and for receiving a portion of a shelf unit therein, and comprising a bracket. The bracket has a back wall defining a bottom, a top and vertical edges, and side arms, extending laterally from the vertical edges of the back wall, whereby defining outer surfaces and inner surfaces of the bracket. At least a first protrusion is located on the inner surfaces of the bracket and is adapted for mating engagement with a corresponding indentation in the post for being vertically secured thereto. Each of the side arms comprises at least a slot adapted for supporting at least a portion of the shelf unit therein. The slots have friction edge portions, adapted for the captive engagement of the portion of the shelf unit therein.

 According to a further broad aspect of the present invention there is provided an attachment bracket for a shelf support system, adapted for being mounted to a post of square cross-section and for receiving a portion of a shelf unit therein, and comprising a bracket. The bracket has a back wall defining a bottom, a top and vertical edges, and side arms, extending laterally from the vertical edges of the back wall, whereby defining outer surfaces and inner surfaces of the bracket. At least a first protrusion is located on the inner surfaces of the bracket and is adapted

for mating engagement with a corresponding indentation in the post for being vertically secured thereto. Each of the side arms has at least a slot adapted for supporting at least a portion of the shelf unit therein. The inner
5 surface of one of the side arms has a second protrusion at a predetermined distance from the back wall, whereby the bracket is adapted for snap-fitting engagement with the corner post.

According to a still further broad aspect of the
10 present invention there is provided an attachment bracket for a shelf support system, adapted for being mounted to a post of square cross-section and for receiving a portion of a shelf unit therein, and comprising a bracket. The bracket has a back wall defining a bottom, a top and vertical edges,
15 and side arms, extending laterally from the vertical edges of the back wall, whereby defining outer surfaces and inner surfaces of the bracket. At least a first protrusion is located on the inner surfaces of the bracket and is adapted for mating engagement with a corresponding indentation in
20 the post for being vertically secured thereto. Each of the side arms comprises at least a slot adapted for supporting at least a portion of the shelf unit therein. The inner surface of the back wall has at least a second protrusion, whereby adapted for biasing the bracket outwardly from the
25 corner post when the bracket is matingly engaged therewith for forcing the portion of the shelf secured thereto against the post.

BRIEF DESCRIPTION OF THE DRAWINGS

30 A preferred embodiment of the present invention will now be described in detail having reference to the accompanying drawings in which:

Fig. 1 is an exploded perspective view showing a bracket in a shelving system using square cross-section
35 support posts in accordance with the prior art;

Fig. 2 is a perspective view showing the bracket of the prior art secured to a post and supporting a wire shelf;

Fig. 3 is a perspective view of a bracket in accordance with the present invention;

Fig. 4 is a top plan view of the bracket; and

Fig. 5 is a side elevational view of the bracket.

DESCRIPTION OF PREFERRED EMBODIMENTS

10 According to the drawings and more particularly to Fig. 1, a bracket of a shelf system of the prior art is generally shown at 10. The bracket comprises a back wall 11 and side arms 12a and 12b extending forwardly from vertical edges of the back wall 11 at substantially right angles
15 thereto. The back wall 11 and the side arms 12a and 12b define inner surfaces 14 and outer surfaces 15. Protrusions 13 are included in the inner surfaces 14 of the bracket 10 and are formed by indentations 13a on the outer surfaces 15 at the junction of the back wall 11 and the side arms 12a
20 and 12b. Still referring to Fig. 1, only one protrusion 13 is shown, whereby three other protrusions are present on the inner surfaces 14 of the bracket 10.

The side arms 12a and 12b each comprise an upper slot, 17a and 17b, respectively, depending from a top edge
25 thereof, 12a' and 12b', respectively. The side arms 12a and 12b further comprise lower slots 16a and 16b, respectively, downwardly projecting from transverse gaps 18a and 18b, respectively. The transverse gaps 18a and 18b laterally project in the side arms 12a and 12b, respectively. The
30 lower slots 16a and 16b extend substantially perpendicular to the gaps 18a and 18b, respectively, and extend substantially parallel to the back wall 11.

A corner post of the prior art is generally shown at 20 in Fig. 1. The corner post 20 is of square cross-
35 section and comprises a plurality of indentations 21 at its corners, disposed in sets in horizontal planes equally spaced from one another. The indentations 21 of the corner

post 20 are shaped to engage in mating relationship with the protrusions 13 of the bracket 10 and are spaced to correspond with the spacing of the protrusions 13 in the vertical direction. Thus, the bracket 10 can be disposed on
5 any set of indentations 21 of the corner post 20.

Similar ones of the above described mating bracket 10 and corner post 20 may be disposed at the corners of a shelf for the support thereof, as will be explained below. Still referring to Fig. 1, a portion of a wire shelf is
10 generally shown at 22. The wire shelf 22 is defined by a plurality of elongated straight wires 23 having downwardly shaped transverse end sections 23' (only one end being shown). Opposed sinusoidally shaped wires 24a (only one being shown) extend between the straight wires 24 adjacent
15 the end sections 23'. The wire shelf 22 further defines an end wall corner portion 25 consisting of spaced parallel wires 26 and 27. The spacing between the wires 26 and 27 is equal to the spacing between the lower slots 16a, 16b and the upper slots 17a, 17b of the bracket 10. In mounting the
20 shelf 22 on the corner post 20, the wire 26 is disposed in the slots 16a and 16b through the gaps 18a and 18b, whereas the wire 27 is disposed in the slots 17a and 17b. Bracket and corner post assemblies had been placed beforehand at the four corners of the wire shelf 22, whereby the wire shelf 22
25 is supported thereat. Fig. 2 shows a corner adjacent to the corner described in Fig. 1, wherein the wire shelf 22 is mounted to the bracket 10 and corner post 20 assembly by the aforementioned method.

It can be appreciated from Figs. 1 and 2 that the
30 wire shelf 22 forms a collar with the bracket 10 by being secured in the slots thereof, whereby the bracket 10 is kept in mating engagement with the corner post 20. As explained above, the sets of indentations 21 receive the protrusions 13 of the inner surface 14 in mating engagement.
35 Consequently, the bracket 10, and thus the wire shelf 22, are kept from sliding in a vertical direction on the corner posts 20 at the corners thereof. However, a certain amount

of dexterity is expected from a person to mount a shelf to the above described bracket. For instance, the bracket must be held manually on the post while the wire shelf is inserted therein, manually once more. At the same time, the
5 wire shelf must be kept generally horizontal in order for the mounting to be completed.

Returning to Fig. 1, a set of four slots 26a, 26b and 27a, 27b, are defined in the wires 26 and 27, respectively, whereby to be received in a snug fit in the
10 slots 16a, 16b, and 27a, 27b of the bracket 10 respectively. Consequently, the arms of the bracket 10 can not be spread apart when held in the slots of the wires 26 and 27. Furthermore, the wire shelf 22 is secured to the bracket 10 in all horizontal directions. As a result, the shelving
15 system using the brackets of the prior art provides a solid structure, thereby preventing dislodging of its components when subject to, for instance, jarring or shaking.

However, the wire shelf 22 sits in the slots of the bracket 10 and is kept in position by its own weight.
20 If the wire shelf 22 is pushed from below, it may move out of the brackets 10.

Referring to Figs. 3 to 5, and more particularly to Fig. 3, there is provided an attachment bracket, generally shown at 1. The attachment bracket 1 is similar
25 to the bracket 10 described in Fig. 1, and thus like numerals will designate like elements.

The bracket 1 comprises a back wall 11 and side arms 12a and 12b extending forwardly from vertical edges of the back wall 11 at substantially right angles thereto from
30 a top plan view, as shown in Fig. 4. The back wall 11 and the side arms 12a and 12b define inner surfaces 14 and outer surfaces 15. As shown in Fig. 4, a plurality of protrusions 13 are included in inner surfaces 14, and are formed by, in a preferred embodiment, indentations 13a on the outer
35 surfaces 15 at the junction of the back wall 11 and the side arms 12a and 12b. The bracket 1 depicted in Fig. 3

comprises four indentations 13a, and thus four protrusions, hidden in Fig. 3, but partially shown in Fig. 4.

Similarly to the known bracket 10 depicted in Fig. 1, the protrusions 13 are equally spaced, whereby to engage
5 in a mating relation with the indentations 21 of the corner post 20, as explained herein above. Furthermore, the side arms 12a and 12b of the bracket 1 are spaced such that, when the bracket 1 embraces the corner post 20, the inner surfaces 14 of either side arms 12 are generally co-planar
10 therewith.

Advantageously, as best seen in Fig. 4, a pimple 40 is located on the inner surface 14 of one of the side arms 12, resulting from a nick 41 in the outer surface 15. The pimple 40 is placed at a predetermined distance from the
15 back wall 11 equivalent to the width of the corner post 20, whereby the protrusions 13 are kept in mating engagement with the indentations 21 of the corner post 20 when the bracket 1 is placed on the corner post 20. Thus, the bracket 1 and the corner post 20 may interconnect such that
20 the bracket 1 is releasably locked in all directions on the corner post 21 by the pimple 40, whereby installation of a shelf in the bracket 1 will be facilitated as the latter no longer needs to be held manually on the corner post 20.

As shown in Figs. 3 to 5, the side arms 12a and
25 12b have upper slots 17a and 17b, respectively, depending from top edges 12a' and 12b', respectively. The side arms 12a and 12b also have lower slots 16a and 16b, respectively, downwardly projecting from transverse gaps 42a and 42b. The lower slots 16a and 16b are arcuately linked to the gaps 42a
30 and 42b, respectively, and are substantially parallel to the back wall 11. The arcuate connections between the gap 42a and the lower slot 16a, and between the gap 42b and the lower slot 16b, define friction edges 43a and 43b, respectively. Furthermore, the upper slots 17a and 17b of
35 the side arms 12a and 12b, respectively, also define friction edges, 44a and 44b, respectively.

The slots 16a, 16b, 17a and 17b are sized to receive a portion of a shelf, may it be the wire shelf 22 of Fig. 1 or a plate member as disclosed in U.S. Patent No. 4,952,286, issued on June 3, 1986 to the present assignee.

5 In any case, the shelf elements are snugly received in the slots 16a, 16b, 17, and 17b, and are now held captive therein by the friction edges 43a, 43b, 44a and 44b, respectively. Therefore, the shelving is now prevented from upwardly moving out of the slots of the bracket 1 in

10 response to an accidental upward force. On the other hand, the insertion of the shelving in the lower slots 16a and 16b of the bracket 1 is facilitated by the arcuate connections thereof. Furthermore, no tools outside of a hammer, when necessary, are required to secure the shelving to the

15 bracket 1 nor for the releasing thereof.

The inner surface 14 of the back wall 11 of the bracket 1 also comprises at an upper edge 11' thereof a further protrusion 45, formed by an indentation 45a in the outer surface 15 thereof. As shown in Fig. 3, only one

20 indentation 45a and thus only one protrusion 45 have been added to the bracket 1. However, another pair of protrusion 45/indentation 45a can be added at a bottom edge thereof. When shelving is inserted in the bracket 1, a collar is formed around the corner post 20, by the side arms 12a and

25 12b, the back wall 11 and the shelving, similarly to Fig. 1 of the prior art. The protrusion 45 is compressed such that it biases the bracket 11 away from the corner post 20. As a result thereof, the shelving closing the above described collar is pressed against the corner post 20, whereby added

30 strength is provided to the corner post 20 and bracket 1 assembly.

It is within the ambit of the present invention to cover any obvious modifications of the embodiments described herein, provided such modifications fall within the scope of

35 the appended claims.